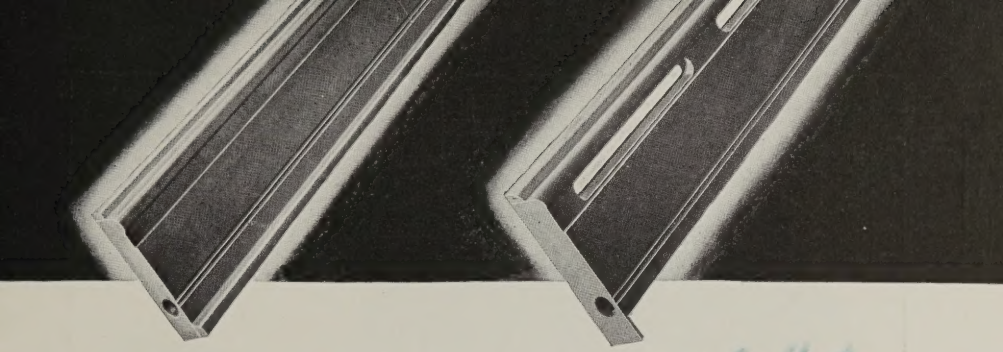


1948

Ratings and Installation Guide

BURNHAM

*BASE-RAY

RADIANT BASEBOARD

*Registered U. S. Patent Office

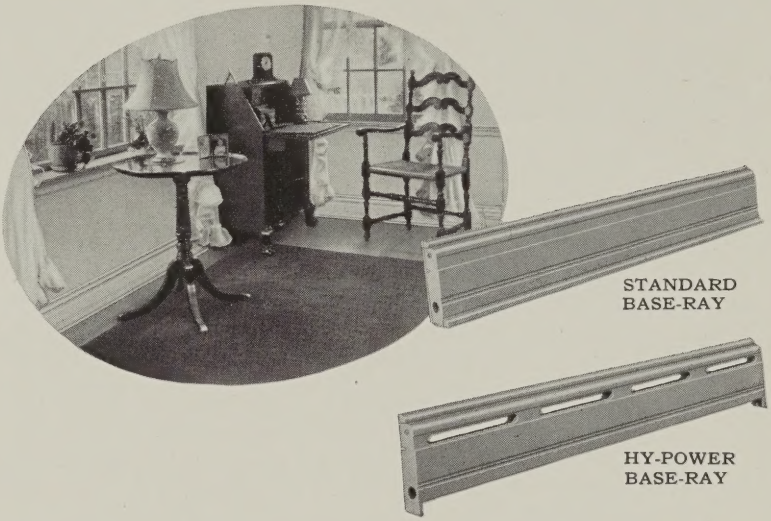
Burnham Corporation

BOILERS AND RADIATORS

IRVINGTON, N. Y.

Baltimore 18, Md.	2301 No. Charles St.
Boston 39, Mass. (Cambridge)	298 Albany St.
Chicago 24, Ill.	1038 South Kolmar Ave.
Elizabeth 4, N. J.	701 Spring St.
Detroit, Mich., 21 Woodside Park—Pleasant Ridge	
Irvington, N. Y.	2 Main St.
Lancaster, Pa.	Dillerville Road
Philadelphia 32, Pa.	3135 No. Broad St.
Pittsburgh 21, Pa.	301 Brushton Ave.
Richmond 21, Va.	1729 Summit Ave.
Springfield 1, Mass.	172 Chestnut St.
Zanesville, Ohio	Licking View

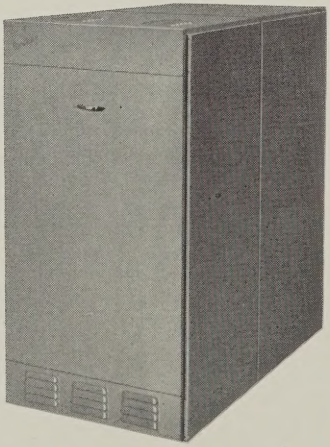
A TYPICAL BASE-RAY INSTALLATION



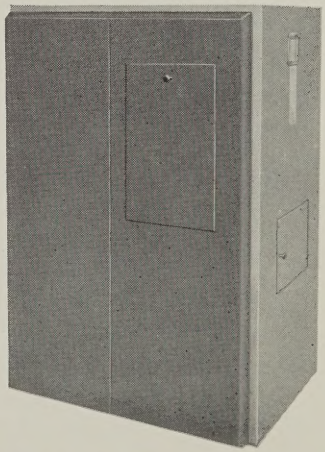
STANDARD
BASE-RAY

HY-POWER
BASE-RAY

Ideal Companions for BASE-RAY Installations



YELLO-JACKET BOILER



DE LUXE OIL BOILER

BASE-RAY RADIANT BASEBOARD

BASE-RAY Radiant Baseboards represent a practical and enlightened approach to panel heating. BASE-RAY Radiant Systems have all the comfort advantages of panel heating systems and yet it is a system that is easy and economical to install. One is not confronted with the many problems that arise when pipe coils are embedded in the floors or ceilings—problems involving complicated engineering and special building construction.

TYPE SYSTEMS ON WHICH BASE-RAY MAY BE USED

BASE-RAY may be used on all types of Hot Water Heating Jobs—One Pipe or Two Pipe, Gravity or Forced Circulation—and on Two Pipe Steam or Vapor Jobs.

Calculate the heat losses for the building according to standard recognized practices—just the same as you would if tube type radiators were being used. We recommend the method shown in The Institute of Boiler and Radiator Manufacturers (IBR) Installation Guides.

BASE-RAY is particularly suited for high temperature Hot Water Jobs—200 F to 215 F. This is due to the fact that the heat is delivered from a long low source and not from a concentrated area.

BASE-RAY Radiant Baseboards, cast iron radiators and cast iron convectors may be installed in the same heating system.

RATINGS

7"–STANDARD BASE-RAY

Length* Number of Lineal Feet	Square Feet† per Lineal Foot 1.25	STEAM Btu per Hour	HOT WATER Btu Emission Rate—Average Base-Ray Water Temperature						Length* Number of Lineal Feet
		240 Btu / 215 F	240 Btu / 215 F	210 Btu / 200 F	200 Btu / 195 F	190 Btu / 190 F	170 Btu / 180 F	150 Btu / 170 F	
2	2.5	600	600	522	500	469	417	370	2
3	3.8	900	900	783	750	703	625	556	3
4	5.0	1200	1200	1043	1000	938	833	741	4
5	6.3	1500	1500	1304	1250	1172	1042	926	5
6	7.5	1800	1800	1565	1500	1406	1250	1111	6
7	8.8	2100	2100	1826	1750	1641	1458	1296	7
8	10.0	2400	2400	2087	2000	1875	1667	1481	8
9	11.3	2700	2700	2348	2250	2109	1875	1667	9
10	12.5	3000	3000	2609	2500	2344	2083	1852	10
11	13.8	3300	3300	2870	2750	2578	2292	2037	11
12	15.0	3600	3600	3130	3000	2813	2500	2222	12
13	16.3	3900	3900	3391	3250	3047	2708	2407	13
14	17.5	4200	4200	3652	3500	3281	2917	2593	14
15	18.8	4500	4500	3913	2750	3516	3125	2778	15
16	20.0	4800	4800	4174	4000	3750	3333	2963	16
17	21.3	5100	5100	4435	4250	3984	3542	3148	17
18	22.5	5400	5400	4696	4500	4219	3750	3333	18
19	23.8	5700	5700	4957	4750	4453	3958	3519	19
20	25.0	6000	6000	5217	5000	4688	4167	3704	20
21	26.3	6300	6300	5478	5250	4922	4375	3889	21
22	27.5	6600	6600	5739	5500	5156	4583	4074	22
23	28.8	6900	6900	6000	5750	5391	4792	4259	23
24	30.0	7200	7200	6261	6000	5625	5000	4444	24

*Add ½" to length for each bushing.

*Add 5" to length for each valve enclosure.

†Based upon Engineering Standard of 240 Btu emission per square foot per hour at 215 F.

Tapped ¾" at bottom only of both End Sections.

Ratings are shown in Square Feet in line with present practice covering Tube Type Radiators; and also in Btu. When the Btu heat loss of the room has been calculated and the temperature of the water has been determined, the above Table will quickly tell you the length BASE-RAY required. For example, if the heat loss of the room is 5000 Btu and a Water Temperature of 200 F is selected, 19 lineal feet of STANDARD BASE-RAY is required.

RATINGS

7"–HY-POWER BASE-RAY

Length* Number of Lineal Feet	Square Feet† per Lineal Foot 2.08	STEAM Btu per Hour	HOT WATER Btu Emission Rate—Average Base-Ray Water Temperature						Length* Number of Lineal Feet
		240 Btu / 215 F	240 Btu / 215 F	210 Btu / 200 F	200 Btu / 195 F	190 Btu / 190 F	170 Btu / 180 F	150 Btu / 170 F	
2	4.2	1000	1000	870	833	781	694	617	2
3	6.3	1500	1500	1304	1250	1172	1042	926	3
4	8.3	2000	2000	1739	1667	1563	1389	1235	4
5	10.4	2500	2500	2174	2083	1953	1736	1543	5
6	12.5	3000	3000	2609	2500	2344	2083	1852	6
7	14.6	3500	3500	3043	2917	2734	2431	2160	7
8	16.7	4000	4000	3478	3333	3125	2778	2469	8
9	18.8	4500	4500	3913	3750	3516	3125	2778	9
10	20.8	5000	5000	4348	4167	3906	3472	3086	10
11	22.9	5500	5500	4783	4583	4297	3819	3395	11
12	25.0	6000	6000	5217	5000	4688	4167	3704	12
13	27.1	6500	6500	5652	5417	5078	4514	4012	13
14	29.2	7000	7000	6087	5833	5469	4861	4321	14
15	31.3	7500	7500	6522	6250	5859	5208	4630	15
16	33.3	8000	8000	6957	6667	6250	5556	4938	16
17	35.4	8500	8500	7391	7083	6641	5903	5247	17
18	37.5	9000	9000	7826	7500	7031	6250	5556	18
19	39.6	9500	9500	8261	7917	7422	6597	5864	19
20	41.7	10000	10000	8696	8333	7813	6944	6173	20
21	43.8	10500	10500	9130	8750	8203	7292	6481	21
22	45.8	11000	11000	9565	9167	8594	7639	6790	22
23	47.9	11500	11500	10000	9583	8984	7986	7099	23
24	50.0	12000	12000	10435	10000	9375	8333	7407	24

*Add ½" to length for each bushing.

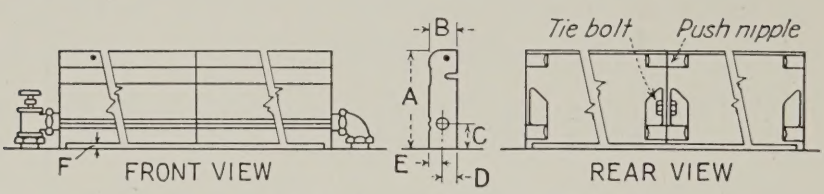
*Add 5" to length for each valve enclosure.

†Based upon Engineering Standard of 240 Btu emission per square foot per hour at 215 F.

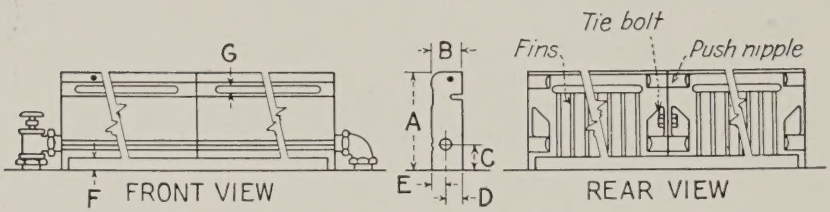
Tapped ¾" at bottom only of both End Sections.

Ratings are shown in Square Feet in line with present practice covering Tube Type Radiators; and also in Btu. When the Btu heat loss of the room has been calculated and the temperature of the water has been determined, the above Table will quickly tell you the length BASE-RAY required. For example, if the heat loss of the room is 5200 Btu and a Water Temperature of 200 F is selected, 12 lineal feet of HY-POWER BASE-RAY is required.

DIMENSIONS and SPECIFICATIONS



STANDARD BASE-RAY
(Without Top and Bottom Wood Moldings)



HY-POWER BASE-RAY
(Without Top Wood Molding)

BASE-RAY DIMENSIONS

	A	B	C	D	E	F	G
7″ STANDARD	7″	1¾″	1¾″	1″	¾″	½″	—
7″ HY-POWER	7″	2″	1¾″	1¼″	¾″	1″	¾″

Tapped ¾″ at Bottom only of both End Sections.

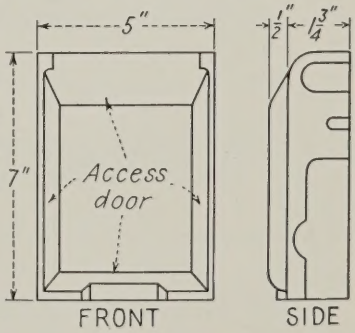
Air Vent Tappings—⅛″ tappings are located on ends of End Sections and on face of Left End Sections.

BASE-RAY Assemblies, both STANDARD and HY-POWER, require the following types of sections:

24″ Left End Sections
24″ Right End Sections
24″ Intermediate Sections
12″ Right End Sections
12″ Left End Sections

The 12″ Right End is used only on Assemblies of odd number of lineal feet — 3-5-7-9, etc.

The 12″ Left is used only in making up a 2 foot assembly.



VALVE ENCLOSURE DIMENSIONS

Used in concealing valves, elbows, and traps. Made in L.H. and R.H. patterns. Attached to BASE-RAY with bolt. The same enclosure is used on STANDARD and HY-POWER BASE-RAY.

INSTALLATION DETAILS

A BASE-RAY heating system is installed in the same manner as an ordinary Radiator system. Use conventional practice in selecting Boiler and Pipe sizes, including Mains, Risers and Branches. Supply and return connections to BASE-RAY are made in the same way as with conventional Radiators.

There are, however, a few points which should be kept in mind in installing BASE-RAY and these are indicated below.

LOCATION OF BASE-RAY

BASE-RAY should be placed along exposed walls in place of the usual wood baseboard. If the outside walls do not provide sufficient space, place additional assemblies on inside walls. Where desired, BASE-RAY may be recessed the depth of the lath and plaster, and will extend into the room approximately 1".

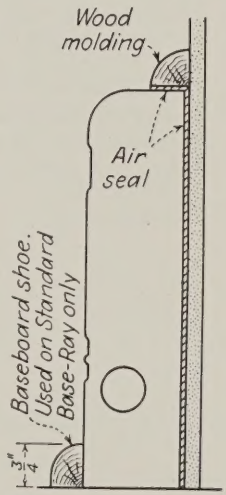
"AIR SEAL" AND WOOD MOLDINGS

It is necessary to prevent leakage of air between the walls and BASE-RAY since this would cause prominent dirt streaks on the wall above the heating unit. This can be avoided by installing an "Air Seal" as indicated below:

The wall in back of STANDARD and HY-POWER BASE-RAY and the valve enclosures should be faced with 10 lb. asbestos paper, aluminum foil, or other suitable paper from the floor to the top of BASE-RAY—and lapped over the top a ½".

The "Air Seal" is held in place by a ½" x ½" Standard Wood Mold placed at the top of both STANDARD and HY-POWER Models. A ½" x ¾" wood mold (baseboard shoe) should be placed at the bottom of the Standard model only. A bottom mold is not used on the HY-POWER Model.

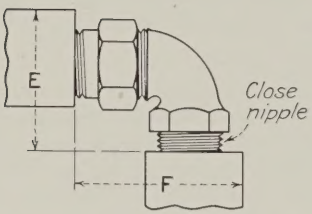
The wood molds and "Air Seal" are not furnished by us.



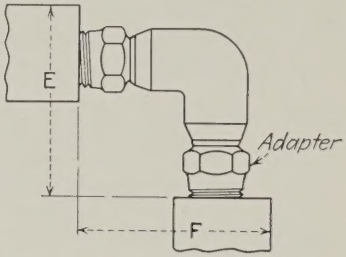
CONNECTING BASE-RAY IN SERIES AT CORNERS OF ROOMS

When BASE-RAY is installed on two (2) or more adjoining walls, they may be connected in series by the use of a ¾" Radiator union elbow and close nipple, or by the use of ¾" sweat type copper fittings. These fittings are installed at the bottom only. Usually considerable labor and material are saved by following this practice.

Inasmuch as union elbows and copper fittings are slightly flexible, BASE-RAY assemblies can be lined up with adjoining walls even though the walls are not absolutely at 90° angle. BASE-RAY assemblies can be deflected as much as 1″ in a length of 10 feet.



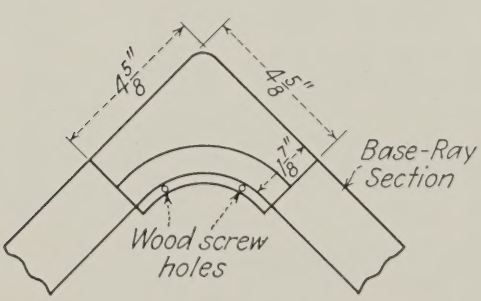
RADIATOR UNION ELBOW



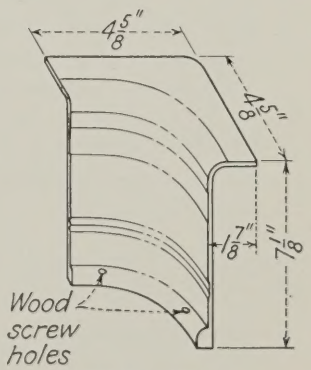
SWEAT FITTING

It is necessary to work from the corner of the room when BASE-RAY is connected in series as shown above. Dimensions E and F from the end of BASE-RAY to the wall will vary depending upon the make of the fittings used. You must determine this dimension before roughing-in for the supply and return piping to BASE-RAY.

A metal Corner Plate is furnished by us to conceal these fittings. It overlaps BASE-RAY at front and top. It is provided with a metal baseboard shoe at bottom drilled for screws for attaching to floor. A standard wood mold holds it in place at top. The same Corner Plate is used for both STANDARD and HY-POWER BASE-RAY.



TOP VIEW



FRONT VIEW

CORNER PLATE

INSULATION

In order that fuel costs may be held to a minimum the outside walls on which BASE-RAY is installed should be insulated to a minimum height of 12″ from the floor. Insulation bats or loose insulation placed between the studs may be used for this purpose. When BASE-RAY is recessed, *it is essential* that insulation to a minimum height of 12″ be used.

EXPANSION

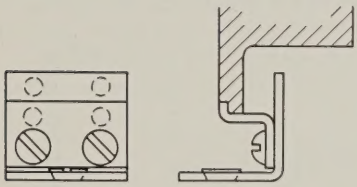
BASE-RAY will expand about ⅛″ in 10 lineal feet with a temperature rise of 180 F. To provide for this, holes cut through the floors should be larger than the pipe, and swing connections should be located in branches between the Main and Risers.

VENTING

When two or more BASE-RAY assemblies are connected in series on a Hot Water Job, it is necessary to vent each assembly. When connected in series on a 2-Pipe Steam Job, only one air vent need be used.

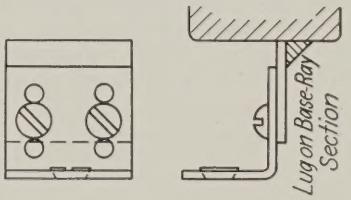
CENTER SUPPORT AND HOLDBACK BRACKET

These Brackets are made of steel and perform a dual function of serving as a Center Support and also holding BASE-RAY assembly to the wall. They have a ⅜″ vertical adjustment and are attached to the floor with screws after the BASE-RAY assembly has been installed. When used with STANDARD BASE-RAY, the Brackets are completely concealed by the baseboard shoe. When used with HY-POWER BASE-RAY, they are practically invisible (a baseboard shoe is not used at the bottom of the HY-POWER model).



STANDARD

Place Bracket in center of recess located on face of section to provide tolerance for expansion.

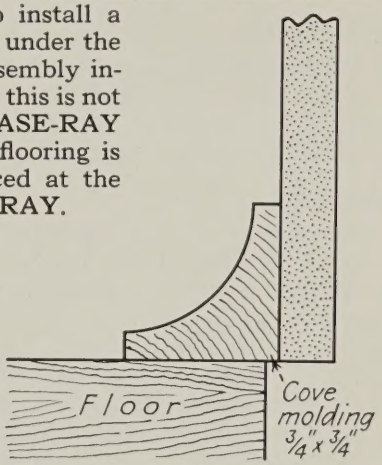


HY-POWER

LENGTH ASSEMBLY	NUMBER OF BRACKETS REQUIRED
2 to 7 Lineal Feet	0
8 to 14 Lineal Feet	1
15 to 21 Lineal Feet	2
22 to 28 Lineal Feet	3

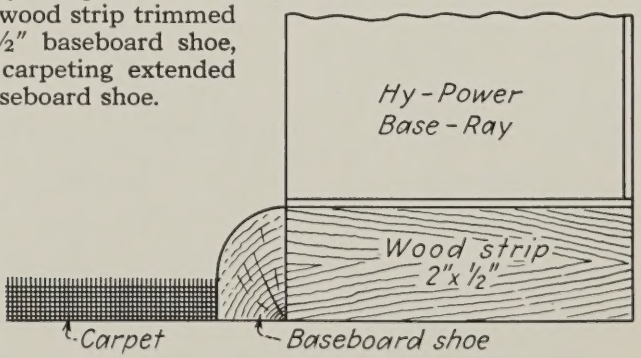
MODERNIZATION JOBS

When BASE-RAY is installed on old jobs, it is necessary to remove the wood baseboard where BASE-RAY is installed. If the floor is not finished to the plaster line, and the HY-POWER model is used, the unfinished floor or any imperfections in it can be concealed by installing a ¾" x ¾" cove molding in the angle where floor and wall meet. An alternate method of concealing imperfect flooring is to install a wood strip 2" wide by ½" thick under the entire length of BASE-RAY assembly including valve enclosure. Usually this is not necessary when STANDARD BASE-RAY is used inasmuch as imperfect flooring is concealed by the molding placed at the bottom of STANDARD BASE-RAY.



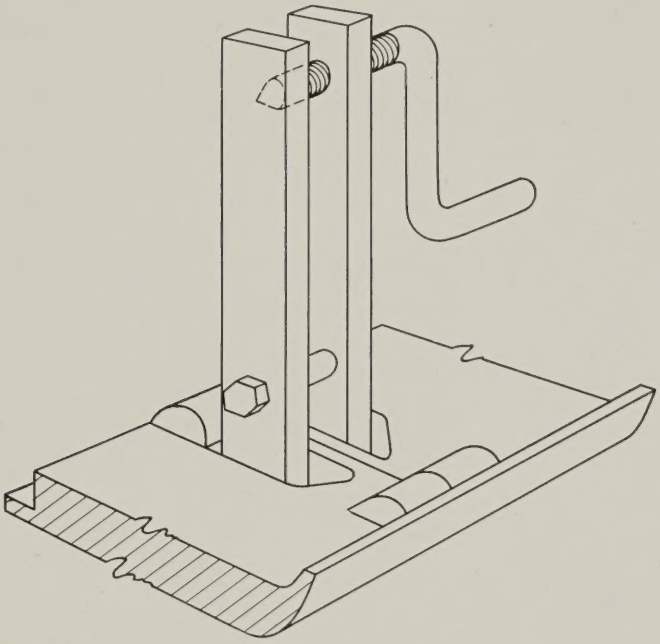
WALL TO WALL CARPETING

When STANDARD BASE-RAY is used, the carpeting can readily be extended to the molding located at the bottom of BASE-RAY. When the HY-POWER model is used, the carpeting may be extended under the BASE-RAY assembly, or BASE-RAY may be placed on a 2" x ½" wood strip trimmed with a ½" baseboard shoe, and the carpeting extended to the baseboard shoe.



BASE-RAY ASSEMBLY CLAMP

BASE-RAY may be readily assembled on the job with the use of BASE-RAY assembly clamp furnished at a nominal charge. BASE-RAY is shipped assembled in lengths up to 6 lineal feet—longer units are shipped in two or more sub-assemblies for assembly on the job. Only a couple minutes are required to assemble BASE-RAY sub-assemblies.



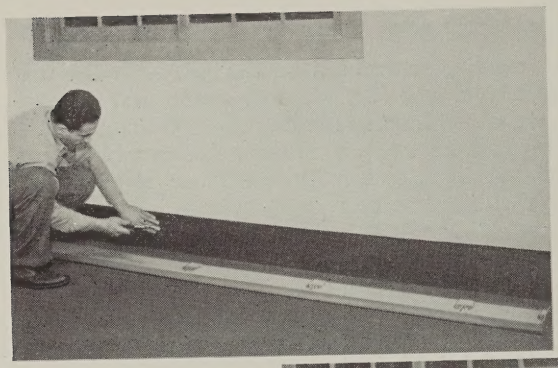
Clean edge of sections, nipple ports, and nipples. Place a thin coating of pipe joint compound on nipples. Insert nipples and push sections together hand tight. Place the jaws of the clamp in the two recesses and tighten the bolt hand tight. Turn the crank until the sections are made up iron to iron. Remove the clamp, drop the tie bolts in the bolt slots, and tighten securely.

HOW TO ORDER

BASE-RAY Orders and Specifications should be written as follows:

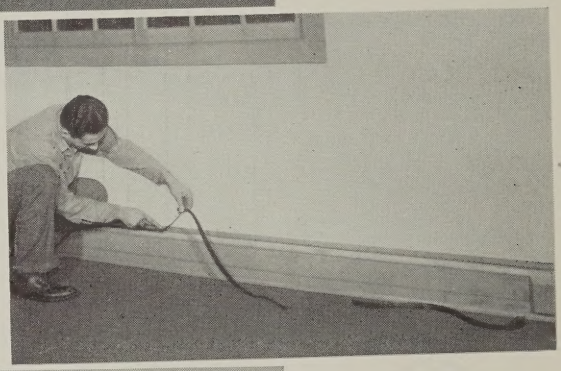
Quantity	Length in Feet	Type	Steam or Water	Tappings
2	10	7″ STANDARD	Water	½″x½″
5	13	7″ HY-POWER	Water	¾″x¾″

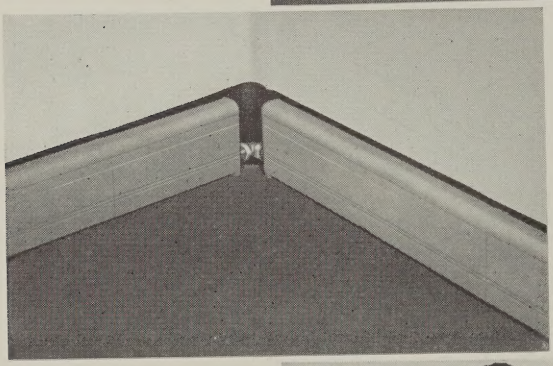
5 Left Hand Valve Enclosures
5 Right Hand Valve Enclosures
2 Corner Plates
2 STANDARD Center Supports
5 HY-POWER Center Supports
1 BASE-RAY Assembly Clamp

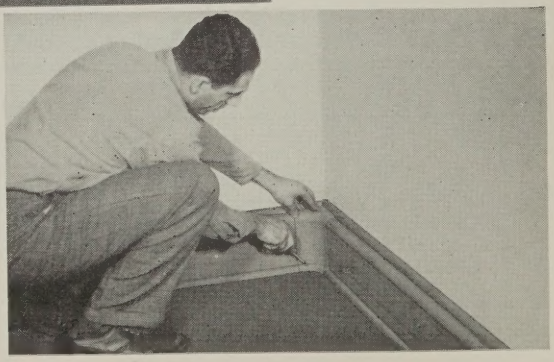


Facing the wall at rear of BASE-RAY with asbestos paper. The paper is nailed to wall. Reason—to eliminate wall streaks.

The paper is lapped over the top of BASE-RAY and covered with ½" quarter round molding. The paper acts as a seal to prevent wall streaks.





Connecting BASE-RAY in series at the corner of a room is easily done by using a ¾" radiator union elbow and close nipple.

The connecting elbow is concealed by a neat corner plate. Top and bottom wood moldings are in place.